IN THE CLAIMS:

Please amend the claims as follows:

Claim 1. (Currently Amended) A ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ (x+y+z=1, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$) in which the concentration of an n-type carrier is $1x10^{19}$ cm^{-3} or less, wherein the concentration of a p-type dopant is 1×10^{17} cm^{-3} or more and $1x10^{21}cm^{-3}$ or less;

wherein a single layer contains the n-type carrier and the p-type dopant.

Claim 2. (Currently Amended) A ~~3-5~~ III-V group compound semiconductor having a structure in which a layer (B) composed of a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_uGa_vAl_wN$ (u+v+w=1, $0 < u \leq 1$, $0 \leq v < 1$, $0 \leq w < 1$) is adjacent to a layer (A) composed of a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ (x+y+z=1, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$) in which the concentration of an n-type carrier is $1x10^{19}$ cm^{-3} or less, wherein the concentration of a p-type dopant is 1×10^{17} cm^{-3} or more and $1x10^{21}cm^{-3}$ or less, and the band gap is larger than that of said layer (B).

Claim 3. (Currently Amended) A ~~3-5~~ III-V group compound semiconductor having a structure in which a layer (A) composed of a

~~3-5~~ III-V group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ ($x+y+z=1$, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$) in which the concentration of an n-type carrier is $1x10^{19}$ cm^{-3} or less, wherein the concentration of a p-type dopant is 1×10^{17} cm^{-3} or more and $1x10^{21}cm^{-3}$ or less is adjacent to a layer (C) composed of a p-type ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_aGa_bAl_cN$ ($a+b+c=1$, $0 \leq a \leq 1$, $0 \leq b \leq 1$, $0 \leq c \leq 1$).

Claim 4. (Currently Amended) A ~~3-5~~ III-V group compound semiconductor having a structure comprising at least one layer (A) composed of a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ ($x+y+z=1$, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$) in which the concentration of an n-type carrier is 1×10^{19} cm^{-3} or less, wherein the concentration of a p-type dopant is 1×10^{17} cm^{-3} or more and $1x10^{21}$ cm^{-3} or less, between a layer (B) composed of a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_uGa_vAl_wN$ ($u+v+w=1$, $0 < u \leq 1$, $0 \leq v < 1$, $0 \leq w < 1$) and a layer (C) composed of a p-type ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_aGa_bAl_cN$ ($a+b+c=1$, $0 \leq a \leq 1$, $0 \leq b \leq 1$, $0 \leq c \leq 1$).

Claim 5. (Currently Amended) A ~~3-5~~ III-V group compound semiconductor having a structure comprising a layer (B) composed

of a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_uGa_vAl_wN$ ($u+v+w=1$, $0 < u \leq 1$, $0 \leq v < 1$, $0 \leq w < 1$) carrying thereon a laminated layer (D) composed of an n-type ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_pGa_qAl_rN$ ($p+q+r=1$, $0 \leq p \leq 1$, $0 \leq q \leq 1$, $0 \leq r \leq 1$) having larger band gap than that of said layer (B), and at least one layer (A) composed of a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ ($x+y+z=1$, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$) in which the concentration of an n-type carrier is $1x10^{19}$ cm^{-3} or less, wherein the concentration of a p-type dopant is 1×10^{17} cm^{-3} or more and $1x10^{21}cm^{-3}$ or less, between said layer (D) composed of the n-type ~~3-5~~ III-V group compound semiconductor and a layer (C) composed of a p-type ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_aGa_bAl_cN$ ($a+b+c=1$, $0 \leq a \leq 1$, $0 \leq b \leq 1$, $0 \leq c \leq 1$), on the opposite side to said layer (B).

Claim 6. (Currently Amended) The ~~3-5~~ III-V group compound semiconductor according to any one of claims 1 to 5 wherein the p-type dopant is Mg and/or Zn.

Claim 7. (Currently Amended) A method of producing a ~~3-5~~ III-V group compound semiconductor according to any one of

claims 1 to 5, comprising growing a ~~3-5~~ III-V group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ ($x+y+z=1$, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$) in which the concentration of an n-type carrier is 1×10^{19} cm^{-3} or less, wherein the concentration of a p-type dopant is 1×10^{17} cm^{-3} or more and $1 \times 10^{21} cm^{-3}$ or less, at temperatures of 600°C or more and 950°C or less according to a metal organic vapor phase growth method.

Claim 8. (Currently Amended) A light emitting device obtained by using a ~~3-5~~ III-V group compound semiconductor according to any one of claims 1 to 5.

Claim 9. (Canceled)

Section 3

The Examiner objects to the claims for reciting that the semiconductor compound is a Group "3-5" compound and not Group "III-V" compound. In response, Applicants have amended the claims to recite that the semiconductor is a Group "III-V" compound. Accordingly, withdrawal of the objection is respectfully requested.

Sections 4-5

Claim 9 is rejected under 35 U.S.C. §112, first paragraph. Applicants respectfully traverse the rejection.

Since claim 9 has been cancelled this rejection is rendered moot. However, in view of the fact that claim 1 has been amended to recite the subject matter of cancelled claim 9, the following comments are directed to the patentability of newly amended claim 1 with respect to the requirements of 35 USC 112, first paragraph.

The Examiner has taken the position that the subject matter of claim 1, as amended above, constitutes new matter. Specifically, the Examiner finds that the specification does not include adequate support for the inventive composition wherein

"a single layer contains the n-type carrier and the p-type dopant".

Applicants respectfully submit that the skilled artisan would reasonably conclude that the "single layer" refers to a single layer or a combination of adjacent layers when the skilled artisan takes into consideration the disclosure of the specification. Specifically, the instant disclosure teaches that "the III-V group compound semiconductor having a concentration of a p-type dopant of 1 x 10^{17} cm^{-3} or more and 1 x 10^{21} cm^{-3} or less, **which can be laminated**..." (emphasis added, see page 2, lines 20-25); and "a second layer composed of a 3-5 group compound semiconductor represented by the general formula $In_uGa_vAl_wN$ ($u+v+w=1$, $0 < u \leq 1$, $0 \leq v < 1$, $0 \leq w < 1$) **is adjacent to** a first layer composed of a 3-5 group compound semiconductor represented by the general formula $In_xGa_yAl_zN$ ($x+y+z=1$, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$)" (emphasis added, see claims 2-3). Furthermore, the Examples 1-4 show III-V group compound semiconductors of claim 1, each of which is a single layer.

Accordingly, the present inventors had possession of the invention as described in newly amended claim 1, as of the effective U.S. filing date. As such, withdrawal of the rejection under 35 U.S.C. §112 first paragraph is respectfully requested.

Sections 6-7

Claims 1-8 are rejected under 35 U.S.C. §102(e) as being anticipated by Iyechika et al., U.S. 6,023,077.

Advantages of the Present Invention:

The inventive group III-V compound semiconductor of the general formula $In_xGa_yAl_zN$ is formed with the concentration of the p-type dopant in a range of $1 \times 10^{17}cm^{-3}$ to $1 \times 10^{21}cm^{-3}$. By retaining the p-type impurity concentration within this range, it is relatively easy to control the n-type carrier concentration with high reproducibility and there is high crystallinity when the layer is laminated with a light-emitting layer. Thus, a light emitting device having high light emitting efficiency can be obtained.

Experimental evidence of this fact can be seen in the examples and comparative examples of the present specification.

Iyechika et al.:

Present claim 1 recites the following elements: (A) $In_xGa_yAl_zN$ ($x+y+z=1$, $0 \leq x \leq 1$, $0 \leq y \leq 1$, $0 \leq z \leq 1$); (B) a concentration of an n-type carrier is $1x10^{19}$ cm^{-3} or less; and (C) a concentration of a p-type dopant is 1×10^{17} cm^{-3} to 1 x

10^{21} cm^{-3}. The Examiner has maintained the rejection over Iyechika et al., and specifically cites the following passages of Iyechika et al.: column 2, lines 48-49 for teaching element (A); column 5, lines 17-19 for teaching element (B); and column 7, lines 14-22 and column 8, lines 1-14 for teaching element (C).

As noted above, both inventive claims 1-2 and the present specification teach that the concentration ranges of the n type carrier and the p-type dopant refer to the concentration ranges in a ***single*** layer of the semiconductor.

The Examiner seems to be confusing the n-type *dopant* of Iyechika et al. with the inventive n-type *carrier*. These are distinct concepts as shown in Inventive Examples 1-4.

As the MPEP instructs, all claim limitations must be taught in order that the cited reference anticipates the application claims. Since Iyechika et al. is silent with respect to having an n-type carrier in a concentration of 1 x 10^{19} cm^{-3} or less and a concentration of a p-type dopant having a concentration in the range of 1 x 10^{17} cm^{-3} to 1 x 10^{21} cm^{-3}, in a single layer, Applicants respectfully submit that a *prima facie* case of anticipation based on Iyechika et al. does not exist.

Withdrawal of the anticipation rejection is respectfully requested.